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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Motoyasu Nagano

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EXAMINER

DANG, KET D

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,909	Applicant(s) NAGANO ET AL.	
	Examiner KET DANG	Art Unit 4118	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 29 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/29/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. PCT/JP2006/304946, filed on March 14, 2006.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamoto (JP 410109163 A) in view of Blankenship (US 6,248,976 B1).
5. Regarding claim 1, Kawamoto discloses a consumable electrode type arc welding machine which makes use of an arc generated between a base metal of welding and a wire supplied thereto, the machine comprising: a welding voltage detection circuit for detecting a welding voltage and outputting a welding voltage detection signal (Paragraph 3, lines 4-5); a welding current detection circuit for detecting a welding current and outputting a welding current detection signal (Paragraph 3, lines 7-9); a short-circuit arc judgment circuit for outputting a short-circuit arc judgment signal, after accepting the welding voltage detection signal and judging whether the machine is in a short-circuit state or in a arc state (Paragraph 3, lines 5-7); a short-circuit waveform control circuit for outputting a short-circuit

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waveform control signal after accepting the welding current detection signal (Paragraph 3, lines 9-10); an arc waveform control circuit for outputting an arc waveform control signal for an arc period after accepting the welding voltage detection signal (Paragraph 3, lines 10-12); and a switching circuit 25 (Fig. 4) which accepts the short-circuit waveform control signal and the arc waveform control signal and selects the arc waveform control signal in the arc period or the short-circuit waveform control signal in the short-circuit period based on the short-circuit arc judgment signal, and outputs a selected signal (Paragraph 3, lines 12-18); wherein a welding power 5 (Fig. 1) is controlled by the output from the switching circuit, **except for** an arc resistance calculator for calculating and outputting an arc resistance signal and the arc resistance signal is delivered to at least one of the short-circuit waveform control circuit and the arc waveform control circuit for controlling the welding power. **However**, Blankenship teaches an arc resistance calculator for calculating and outputting an arc resistance signal, and the arc resistance signal is delivered to at least one of the short-circuit waveform control circuit and the arc waveform control circuit for controlling the welding power (Col. 2, lines 14-28). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify the Kawamoto's reference, to include arc resistance calculator for calculating and outputting an arc resistance signal, as suggested and taught by Blankenship, for the purpose of determining and maintaining the arc length during the welding process (Col. 2, lines 16-18).

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6. Regarding claims 2-4, Kawamoto discloses the claimed invention, including the consumable electrode type arc welding machine, wherein the short-circuit waveform control circuit accepts the welding current detection signal and outputs a short-circuit waveform control signal (Paragraph 3, lines 9-10), the switching circuit 25 (Fig. 4) selects the arc waveform control signal when the short-circuit arc judgment signal indicates the arc period (Paragraph 3, lines 12-14), when the short-circuit arc judgment signal indicates the short-circuit period (Paragraph 2, line 3), the switching circuit selects the short-circuit waveform control signal, and outputs a selected signal (Paragraph 3, lines 12-14), the welding power 5 (Fig. 1) is controlled based on the output from the switching circuit; wherein the arc waveform control circuit accepts the welding voltage detection signal and outputs an arc waveform control signal (Paragraph 3, lines 10-12).

7. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamoto (JP 410109163 A) in view of Blankenship (US 6,248,976 B1), and further in view of Churchward (US 1,687,492).

8. Regarding claim 5, Kawamoto discloses A consumable electrode type arc welding machine which makes use of an arc generated between a base metal of welding and a wire supplied thereto, the machine comprising: a welding voltage detection circuit for detecting a welding voltage and outputting a welding voltage detection signal (Paragraph 3, lines 4-5); a welding current detection circuit for detecting a welding current and outputting a welding current detection signal

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(Paragraph 3, lines 7-9); a short-circuit arc judgment circuit for outputting a short-circuit arc judgment signal, after accepting the welding voltage detection signal and judging whether the machine is in a short-circuit state or in a arc state (Paragraph 3, lines 5-7); a short-circuit waveform control circuit for outputting a short-circuit waveform control signal after accepting the welding current detection signal (Paragraph 3, lines 9-10); an arc waveform control circuit for outputting an arc waveform control signal for an arc period after accepting the welding voltage detection signal (Paragraph 3, lines 10-12); and a first switching circuit 11 (Fig.1) which accepts the short-circuit waveform control signal and the arc waveform control signal and selects the arc waveform control signal in the arc period or the short-circuit waveform control signal in the short-circuit period based on the short-circuit arc judgment signal, and outputs a selected signal (Paragraph 6, lines 15-17); wherein a welding power 5 (Fig. 1) is controlled by the output from the first switching circuit 11 (Fig. 1), a constant-current control period setting unit outputting a constant-current control period signal which indicates a constant-current control period (Paragraph 6, lines 7-8), a constant-current circuit for outputting a constant-current signal for implementing a certain specific constant-current value after accepting the welding current detection signal and based on the inputted welding current detection signal (Paragraph 6, lines 8-13); and a second switching circuit for selecting 3 (Fig.1) , in accordance with the constant-current control period signal, one of the constant-current signal in the constant-current control period (Paragraph 6, lines 19-20) and the output signal from the first switching circuit 11 (Fig. 1) in a period other than the

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constant-current control period, and outputting a selected signal (Paragraph 6, lines 17-19); and the welding power 5 (Fig. 1) is controlled based on the output from the second switching circuit 3 (Fig.1), **except for** an arc resistance calculator for calculating and outputting an arc resistance signal; when the arc resistance signal continues exhibiting a value that is greater than a certain specific value, and the arc resistance signal is delivered to at least one of the short-circuit waveform control circuit and the arc waveform control circuit. **However**, Blankenship teaches an arc resistance calculator for calculating and outputting an arc resistance signal and the arc resistance signal is delivered to at least one of the short-circuit waveform control circuit and the arc waveform control circuit (Col. 2, lines 12-28). Churchward discloses when the arc resistance signal continues exhibiting a value that is greater than a certain specific value (Page 1, lines 79-81). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify the Kawamoto and Blankenship's references, to include arc resistance is increasing as suggested and taught by Churchward, for the purpose of maintaining a constant flow of current across the arc during welding process (Page 1, lines 81-85 of Churchward).

9. Regarding claims 6-8, Kawamoto, Blankenship, and Churchward disclose the claimed invention, including the consumable electrode type arc welding machine, wherein the short-circuit waveform control circuit accepts the welding current detection signal and outputs a short-circuit waveform control signal (Paragraph 3, lines 9-10); the first switching circuit 11 (Fig. 1) selects the arc waveform control

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signal when the short-circuit arc judgment signal indicates the arc period, when the short-circuit arc judgment signal indicates the short-circuit period (Paragraph 3, lines 12-14); the switching circuit selects the short-circuit waveform control signal, and outputs a selected signal (Paragraph 3, lines 12-14), the welding power 5 (Fig. 1) is controlled based on the output from the switching circuit; wherein the arc waveform control circuit accepts the welding voltage detection signal and outputs an arc waveform control signal (Paragraph 3, lines 10-12).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ogasawara et al (US 6,051,807) disclose pulse arc welding apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KET DANG whose telephone number is (571)270-7827. The examiner can normally be reached on Monday - Friday, 7:30 - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoang Tu can be reached on (571)272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K.D./

Examiner, Art Unit 4118

/TU B HOANG/

Supervisory Patent Examiner, Art Unit 3742